In the Claims:

Claims 1-37 (Canceled)

38. (Currently amended) A method for treatment of cartilage lesions comprising steps:

a) isolating autologous or heterologous chondrocytes or providing stem cells that can be differentiated into chondrocytes;

b) expanding said isolated chondrocytes or stem cells in a growth medium;

c) suspending said expanded chondrocytes or stem cells in a collagen-containing solution;

d) providing a biodegradable support matrix containing plurality of pores;

e) incorporating the suspension obtained in step c) into said support matrix thereby producing a seeded support matrix;

f) preparing an implantable construct for implantation into said cartilage lesion by activating said chondrocytes or stem cells by subjecting said seeded support matrix to conditions promoting activation and propagation of said chondrocytes or stem cells within said support matrix, wherein said conditions for activation and propagation of chondrocytes or stem cells comprise

perfusing said seeded support matrix with a culture medium at a flow rate from about 1 μL/min to about 500 μL/min and

during said perfusing, applying to said seeded support matrix a cyclic hydrostatic pressure from about 0.01 MPa to about 10 MPa above atmospheric pressure at about 0.01 to about 1 Hz for from about 1 to about 8 hours followed by applying a static atmospheric pressure for from 16 to about 23 hours;

g) implanting said construct into said cartilage lesion; and

h) depositing a biodegradable polyethylene glycol cross-linked with methylated collagen over said construct,

wherein said implanting of said construct into said cartilage lesion and said deposition of said polyethylene glycol cross-linked with methylated collagen over said implanted construct results, within three months, ~~in a growth and maturing of said chondrocytes or stem cells and~~ in integration of said construct ~~seeded with said chondrocytes or stem cells~~ into a native cartilage of the lesion and in formation of a superficial cartilage layer that overgrows said polyethylene glycol cross-linked with methylated collagen ~~said construct implanted within said lesion~~,

wherein said superficial cartilage layer is an outermost layer of a treated cartilage ~~that forms the layer~~ formed of ~~squamous-like flattened~~ superficial zone chondrocytes covering ~~a layer of~~ said polyethylene glycol cross-linked with methylated collagen and overgrowing the lesion~~, and~~

~~wherein said biodegradable support matrix and said polyethylene glycol cross-linked with methylated collagen are both degraded within said three months~~.

39. (Previously amended) The method of claim 38 further comprising step i) wherein a tissue sealant is deposited into said cartilage lesion before said construct is implanted therein,

wherein said sealant is selected from the group consisting of gelatin, a copolymer of polyethylene glycol and poly-lactide or poly-glycolide, periodate-oxidized gelatin, 4-armed

pentaerythritol thiol and a polyethylene glycol diacrylate, 4-armed tetra-succinimidyl ester or tetra-thiol derivatized PEG, photo-polymerizable polyethylene glycol-co-poly(α-hydroxy acid) diacrylate macromer, 4-armed polyethylene glycol derivatized with succinimidyl ester and thiol further cross-linked with methylated collagen, derivatized polyethylene glycol (PEG), polyethylene glycol (PEG) cross-linked with alkylated collagen, tetra-hydrosuccinimidyl or tetra-thiol derivatized PEG, PEG cross-linked with methylated collagen, and a combination thereof.

40. (Previously amended) The method of claim 38 wherein said support matrix is in the form of a sponge or honeycomb prepared from a compound selected from the group consisting of a Type I collagen, Type II collagen, Type IV collagen, gelatin, agarose, collagen containing proteoglycan, collagen containing glycosaminoglycan and collagen containing glycoprotein.

41. (Previously presented) The method of claim 40 wherein said support matrix is a prepared from Type I collagen.

42. (Previously presented) The method of claim 38 wherein said hydrostatic cyclic pressure is applied from about 0.05 MPa to about 3 MPa at 0.1 to about 0.5 Hz.

43. (Previously presented) The method of claim 38 wherein said perfusion flow rate is from about 5 μL/min to about 50 μL/min.

44. (Previously presented) The method of claim 43 wherein said perfusion flow rate is about 5 μL/min.

45. (Previously presented) The method of claim 38 wherein cell activation is performed under oxygen concentration from about 1% to about 20%.

46. (Previously presented) The method of claim 45 wherein cell activation is performed under oxygen concentration from about 2% to about 5%.

47. (Currently amended) The method of claim 38 wherein said formation of superficial cartilage layer constitutes forming a substitute synovial membrane.

48. (Canceled)